Application Number 09/873,933
Amendment in Response to Office Action mailed July 13, 2007

REMARKS

This Amendment is responsive to the Office Action dated July 13, 2007. Applicant has amended claim 1 and added claim 64. Claims 1-3, 37-45 and 47-64 are pending. However, claims 38, 42 and 45 have been withdrawn from consideration.

Claim Rejection Under 35 U.S.C. § 103

In the Office Action, the Examiner rejected claims 1, 2, 37, 39-41, 43, 44 and 48-63 under 35 U.S.C. 103(a) as being unpatentable over Mulcahy et al. (US 6,002,746) in view of Vitale et al. (US 2004/0254757); rejected claim 3 under 35 U.S.C. 103(a) as being unpatentable over Mulcahy et al. in view of Vitale et al. and further in view of Kennedy et al. (US 6,163,594); and rejected claim 47 under 35 U.S.C. 103(a) as being unpatentable over Mulcahy et al. in view of Vitale et al. and further in view of Pezzutti (US 2002/0032765).

Applicant respectfully traverses the rejections. The applied references fail to disclose or suggest the inventions defined by Applicant's claims, and provide no teaching that would have suggested the desirability of modification to arrive at the claimed invention.

Claim 1

Applicant's claim 1 is directed to a method for correlating a subscriber unit in a point to multipoint network with a geographic location. One example of a point to multipoint network is a passive optical network. In a point to multipoint network, multiple subscriber units receive the same downstream transmissions via a common communication medium. Conversely, multiple subscriber units send upstream transmission via a common communication medium. To distinguish transmissions associated with different subscriber units, unique identifiers are assigned to the respective subscriber units.

Although a subscriber unit may have a unique identifier, it can be located at any one of the various geographic locations served by the point to multipoint network. Even though the identity of a subscriber unit may be known by the point-to-multipoint network, e.g., according to a subscriber unit identifier such as a serial number, the geographic location of the subscriber unit is initially unknown. The geographic location may be used to associate particular services with the subscriber unit. For example, the subscriber at one geographic location may desire a first set

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of services, while the subscriber at a different geographic location may desire a second set of services. Therefore, upon installation of a subscriber unit, there is a need to correlate the subscriber unit with its geographic location so that appropriate services can be provisioned for the subscriber.

Applicant's claimed invention as recited in claim 1 is directed to a method for performing this correlation by correlating a subscriber unit with a geographic location of a subscriber. The method of claim 1 includes prompting an installer to manually input a location code associated with a subscriber, the location code permitting identification of a geographic location of the subscriber, receiving the location code in the subscriber unit, transmitting the location code and a subscriber unit identifier via the network from the subscriber unit to a central repository, and storing the location code and the subscriber unit identifier in the central repository to correlate the subscriber unit with the geographic location.

In the rejection of claim 1, the Examiner cited Mulcahy (at Col. 7, lines 64-67), as disclosing prompting an installer to manually input a location code associated with a subscriber unit, and receiving the location code in the subscriber unit. The Examiner apparently considered the terminal number in Mulcahy to be a location code, as claimed. The Examiner further characterized Mulcahy as disclosing transmitting a location code via a network to a central repository (citing Col. 7, lines 29-32), and storing the location code in the central repository to associate the location code with a physical port (citing Col. 8, lines 7-9).

In the rejection, the Examiner recognized that Mulcahy fails to teach or suggest all of the elements recited in the independent claims. In particular, the Examiner admitted that Mulcahy fails to teach transmitting a location code, permitting identification of a geographic location of a subscriber, and a subscriber unit identifier to a central repository. However, the Examiner concluded that Vitale teaches these elements and that it would have been obvious to modify Mulcahy to include them. In particular, the Examiner stated that such a modification would have been obvious "in order to allow technicians to simply input work order identification information from any remote location and receive a unique set of test parameters which are automatically downloaded to the remote tester providing a more efficient manner to test the network."

Applicant disagrees with the conclusion of obviousness for a number of reasons. The aspects of Vitale relied upon by the Examiner, as well as stated reasons for modification, bear no

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relationship to the actual requirements of Applicant's claims. Even if such a modification were made, the result would not conform to the claimed invention. Vitale does not even relate to correlation of a subscriber unit with a geographic location, much less the specific operations set forth in the claims to support such correlation. On the contrary, the Vitale reference assumes that correlation has already been accomplished.

Vitale fails to teach or suggest transmission of a location code permitting identification of a geographic location of a subscriber and a subscriber unit identifier to a central repository as asserted in the Office Action. The disclosure of Mulcahy is directed to a copper line telephone network, which is a point to point network, not a point to multipoint network as claimed. Additionally, the terminal number described by Mulcahy clearly is not a location code as defined by Applicant's claims, as it provides no indication of a geographic location of a subscriber. Further, modification of the Mulcahy system to transmit a location code and a subscriber unit identifier to a central repository per Vitale would serve no purpose in the Mulcahy system. For example, because Mulcahy is directed to a point-to-point network there is no need in the network of Mulcahy for correlation of a subscriber unit with a geographic location. Applicant discusses each of these points in greater detail below.

Vitale

The newly cited Vitale reference fails to teach or suggest transmission of a location code and a subscriber unit identifier from a subscriber unit to a central repository as asserted in the Office Action. The Examiner's own analysis in the Office Action supports this conclusion. For example, as pointed out by the Examiner in the Office Action on page 9, Vitale discloses that technicians only need to enter work order identification information, which may be any information from which the central controller may discern a unique work order. Transmission of both a location code and a subscriber unit identifier is unnecessary in Vitale because each could be singularly used to discern a unique work order. For example, as stated in paragraph [0084] of Vitale, either a customer ID or a street address may be used to uniquely identify a work order. In this manner, Vitale teaches away from the claimed feature of transmission of both a location code and a subscriber unit identifier to a central repository.

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Additionally, the disclosure of Vitale does not provide any reason to transmit a location code associated with a subscriber manually input by an installer and a subscriber unit identifier from a subscriber unit to a central repository to correlate the subscriber unit with the geographic location as claimed. For example, data file 100, which is accessible by central control system, is disclosed as already including customer ID field 102, network location ID field 104 and street address field 106.[1] Hence, all of such information is already pre-correlated in the Vitale system. Vitale assumes that this information is already available, and is not directed to correlation of any of such information. Because this information is already accessible, transmitting a location code associated with a subscriber with a subscriber unit identifier from the subscriber unit to the central repository would be redundant and completely unnecessary. Likewise, storing a location code associated with a subscriber with a subscriber unit identifier in the central repository would not result in correlation of the subscriber unit with the geographic location. Per Vitale, this correlation already exists in data file 100.[2]

Notably, Vitale provides no indication of how subscriber data files are populated with the specified information. Instead, Vitale simply assumes that the subscriber data files exist,[3] presumably as a result of some previous correlation, which could have been performed manually upon enrollment of a subscriber. Vitale clearly does not contemplate any of the particular operations set forth in claim 1 to perform correlation of a subscriber unit with a geographic location of a subscriber. In this sense, Vitale highlights the basic point that the claimed invention relates to particular operations to establish correlation, and not the later use of information resulting from such a correlation.

In the Office Action, the Examiner seemed to suggest that generating test parameters based on geographic information is equivalent to correlation of the geographic information with the set of test parameters.[4] Applicant strongly disagrees. Correlation, according to its ordinary meaning and the usage appropriate in the context of Applicant's disclosure, generally refers to establishing a relationship between two or more items. Consistent with this meaning, the method

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[1] Vitale, paragraphs [0036] and [0045].
[2] Vitale, paragraph [0057].
[3] *See e.g.*, Vitale, paragraphs [0042], [0045], [0057], [0083] and [0112].

[4] Office Action, page 3: "Vitale discloses that the technician sends the work order information to the central controller . . . and waits for the central controller to correlate geographic information with a set of test parameters."

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defined by claim 1 permits geographic information to be correlated with a subscriber unit. In merely selecting test parameters based on geographic information, Vitale does not provide a correlation of such information. Instead, Vitale makes use of a previously established correlation.

For at least these reasons, Vitale clearly fails to teach or suggest the feature of storing the location code and the subscriber unit identifier in the central repository to correlate the subscriber unit with the geographic location as recited in claim 1. Moreover, Vitale provides no teaching that would have suggested modification of the Mulcahy system to arrive at the claimed invention.

Mulcahy

The terminal number described by Mulcahy clearly is not a location code as defined by Applicant's claims, as it provides no indication of a geographic location of a subscriber. It appears that the rejection overlooked the actual language of the claims to the extent that a location code permits identification of a geographic location of a subscriber. The Examiner's analysis did not make reference to this requirement. Instead, the Examiner referred to language in a previous version of the claims, i.e., a physical port.

In the Office Action, the Examiner cited Col. 7, lines 64-67, of Mulcahy as disclosing receiving a location code in a subscriber unit. In the cited passage, however, Mulcahy states that an engineer may be prompted to enter a "node number" and a "terminal number." Neither the node number nor the terminal number discussed by Mulcahy constitutes a location code that permits identification of a geographic location of a subscriber, as set forth in Applicant's claims.

In Mulcahy, the node number is simply a number assigned to a node within an access network. The terminal number in Mulcahy merely identifies a terminal through which a terminal line passes, without regard to a geographic location of a subscriber. This is evidenced by the fact that the route of a terminal line may be physically moved from a first pair of terminals within the node to a second pair of terminals in the node without affecting the location of the subscriber associated with that terminal line. Clearly, neither a node number nor a terminal number permits identification of a geographic location of a subscriber as recited in Applicant's claims.

Further, notwithstanding the above differences, modification of the Mulcahy system to transmit a location code and a subscriber unit identifier to a central repository would serve no

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purpose in the Mulcahy system. One of ordinary skill in the art would have considered the concept of a subscriber unit identifier to be meaningless in the Mulcahy system. A subscriber unit identifier uniquely identifies a subscriber unit in a point-to-multipoint network in which multiple subscribers receive the same information via a common link. Using subscriber unit identifiers, information sent via a common link can be differentiated. In this manner, a subscriber unit can determine whether a particular unit of information is relevant to the associated subscriber. If the information is relevant, the subscriber unit accepts the information from the common link. If the information is not relevant, the subscriber unit ignores it. The correlation of a subscriber unit with a geographic location permits information to be differentiated for delivery to the appropriate subscriber.

When a subscriber unit is installed in a point-to-multipoint network, as claimed, there is no a priori knowledge as to the geographic location of the subscriber unit. Although a subscriber unit may have a unique identifier, the subscriber unit can be located at any one of the geographic locations served by the multipoint network. Consequently, there is a need to correlate the subscriber unit with a geographic location of the subscriber so that services can be provisioned for the subscriber. As described in Applicant's specification, a passive optical network (PON) is one example of a point to multipoint network. In some embodiments, the subscriber unit may be an optical network unit (ONU) in a PON.

Even though a subscriber unit may be known by the point-to-multipoint network, e.g., according to a subscriber unit identifier such as a serial number, the identity of the particular subscriber and geographic location of the subscriber associated with the subscriber unit remains unknown. In particular, multiple subscribers are served by the same transmission line. In other words, in a point to multipoint network, there are no point-to-point connections such as terminals or nodes that would permit identification of subscribers according to a separate line that terminates with the subscriber.

Different subscribers, situated at different geographic locations, may request different types or levels of service. Because many of the subscriber units are connected to the same transmission line, however, they cannot be readily distinguished based on a subscriber unit identifier alone. In accordance with the claimed invention, correlation of each subscriber unit with a subscriber's geographic location via a location code permits provisioning of services for a

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particular subscriber. Even though two subscriber units may be coupled to the same transmission line, e.g., an optical fiber link, it is possible to differentiate them by correlation of a subscriber unit identifier with a subscriber's geographic location.

In contrast, in a point-to-point network, such as the one disclosed by Mulcahy, there is no need for a subscriber unit identifier. The disclosure of Mulcahy refers to an active terminal line, e.g., a telephone line, in which terminal equipment is _already_ associated with a calling line identity, e.g., a telephone number. In other words, a telephone number already exists in the Mulcahy network and is physically correlated with the terminal equipment. Because the Mulcahy network is point-to-point, the geographic location of each endpoint is knowable in advance of the installation of the subscriber unit, and can be maintained in a routing table. Because of the size and complexity of the routing table and the possibility of human error[5], Mulcahy is directed to recording the physical route of an active line through a local switch for which a telephone number already exists to correct mistakes. The claimed invention, on the contrary, deals with point-to-multipoint networks where the geographic location of a subscriber unit is _not_ known and indeed is unknowable without some form of correlation.

Because Mulcahy describes a point-to-point network, there is no need for a subscriber unit identifier. Moreover, modification of Mulcahy to transmit both a location code and a subscriber unit identifier would make no sense. In the system of Mulcahy, information is directed to terminal equipment by simply routing the information to the terminating line associated with the terminal equipment. Each terminating line can be identified with just a telephone number. No other information, such as a separate subscriber unit identifier, is required to ensure that terminal equipment only processes relevant information because all information sent via a terminal line is presumably relevant to the terminal equipment on that terminal line.

Mulcahy fails to disclose a subscriber unit identifier, and the system described in Mulcahy has no purpose for a subscriber unit identifier. No prior art reference, including Vitale, would provide one of ordinary skill in the art any reason to modify the Mulcahy system to include transmitting the location code _and_ a subscriber unit identifier as recited by claim 1. Indeed, one of ordinary skill in the art would consciously avoid such a modification because it

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[5] Mulcahy et al., Col. 1, lines 25-30 ("such routing tables are often not accurate").

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would be meaningless in the Mulcahy system. Moreover, such a modification would not conform to the requirements of Applicant's claims.

In summary, Applicant's claim 1 is directed to correlation of a subscriber unit in a point to multipoint network with a geographic location. Neither of the applied references discloses techniques for performing such a correlation, much less the specific technique recited in claim 1. Mulcahy does not contemplate correlation because there is no need for correlation in a point-to-point network. Vitale also fails to discuss techniques for correlation as the disclosure of Vitale is directed to an operational network and assumes correlation has already been performed.

Claims 2, 3, 37, 39-41, 43, 44 and 47-63

Claims 2, 3, 37, 39-41, 43, 44 and 47-63 are allowable for reasons similar to those stated above with respect to claim 1.

Claims 2, 3, 37, 39-41, 43, 44, 47, 48 and 62 are dependent on claim 1, and therefore include all of the requirements of claim 1. In view of the basic differences discussed above with respect to claim 1, Applicant reserves further comment concerning the limitations set forth in dependent claims 2, 3, 37, 39-41, 43, 44, 47, 48 and 62.

Claims 49-55 define a method including transmitting the location code and a subscriber unit identifier from the subscriber unit to a remote device for correlation of the subscriber unit with the geographic location. Similarly, claims 56-61 define a subscriber unit including a network interface that transmits the location code and a subscriber unit identifier to a remote device for correlation of the location code with the geographic location. The prior art fails to provide any teaching that would have suggested the inventions defined by claims 49-61.

With respect to claims 3 and 47, Kennedy and Pezzutti fail to overcome the deficiencies of Mulcahy and Vitale with respect to the independent claims and are patentable for at least the reasons independent claim 1 is patentable. Dependent claims 2, 37, 39-41, 43-44, 48, 50-55, and 57-62 for at least the reasons independent claims 1, 49 and 56 are patentable as stated herein.

Likewise, for substantially the reasons stated above with respect to claim 1, none of the applied references discloses or suggests a method for correlating a subscriber unit in a point to multipoint network with a geographic location, the method comprising prompting an installer to manually input a location code associated with a human subscriber into the subscriber unit, the

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location code permitting identification of a geographic location of the human subscriber, wherein the subscriber unit is located at the geographic location of the human subscriber, receiving the location code in the subscriber unit, transmitting the location code and a subscriber unit identifier from the subscriber unit to a central repository via the network, storing the location code and the subscriber unit identifier in the central repository, and correlating the subscriber unit with the geographic location based on the location code and the subscriber unit identifier, as set forth in independent claim 63.

For at least these reasons, the Office Action did not establish a prima facie case for non-patentability of Applicant's claims 1-3, 37, 39-41, 43, 44 and 47-63 under 35 U.S.C. 103(a). Withdrawal of this rejection is requested.

New Claim

Applicant has added claim 64 to the pending application. The applied references fail to disclose or suggest the invention defined by Applicant's new claims, and provide no teaching that would have suggested the desirability of modification to arrive at the claimed inventions. Claim 64 specifies that the method of claim 1 further comprises activating subscriber services provisioned for the subscriber after the correlation of the subscriber unit with the geographic location.

No new matter has been added by the new claim.

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CONCLUSION

All claims in this application are in condition for allowance. Applicant respectfully requests reconsideration and prompt allowance of all pending claims. Applicant does not acquiesce in any of the Examiner's current rejections or characterizations of the prior art, and reserves the right to further address such rejections and/or characterizations.

No fees are believed to be due at this time. Please charge any additional fees or credit any overpayment to deposit account number 50-1778.
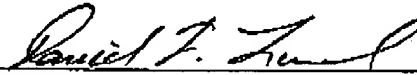
The Examiner is invited to telephone the below-signed attorney to discuss this application.

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